

Attorney Docket No. OTD-030256 US
Customer No. 27778

IN THE CLAIMS

The following listing of the claims, which is provided in accordance with 37 C.F.R. § 1.121, replaces all prior versions and listings of the claims in relation to the present patent application.

Listing of the Claims

1. (Currently amended) An installation tool for landing a hanger, supported by a tubular string, and setting a seal assembly in the annulus between the hanger and a surrounding tubular, comprising:

a mandrel having an upper end ~~connection connectable to~~ connect to the tubular string and a bore therethrough;

a tool body having a lower end adapted for connection to the hanger, said tool body carried by said mandrel, said mandrel and said tool body axially moveable relative to one another;

at least one first connector positioned on said tool body for releasably connecting said tool body to the hanger without ~~mandrel rotation of~~ said upper end connection;

at least one second connector positioned on said tool body for releasably connecting said tool body to the seal assembly;

a pressure responsive shuttle piston on said mandrel, said shuttle piston is axially moveable to urge the seal assembly into the annulus between the hanger and the surrounding tubular in which said hanger is landed, without rotation of said upper end ~~connection of mandrel that is connectable to the tubing string~~; and,

said mandrel having a valve positioned in said mandrel bore, said valve operable between open and closed positions by axial movement of said mandrel relative to said tool body.

2. (Previously presented) The tool of Claim 1, wherein:

said tool body includes a main body, an upper body and a lower body; and,

said main body supporting said at least one second connector for releasably connecting said tool body to the seal assembly.

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3. (Previously presented) The tool of Claim 2, wherein:
said at least one first connector is located on said lower body.

4. (Previously presented) The tool of Claim 3, wherein:
said upper body comprises a frangible connector securing said upper body to said pressure responsive shuttle piston prior to the seal assembly being urged into the annulus between the hanger and the surrounding tubular.

5. (Previously presented) The tool of Claim 4, wherein:
said pressure responsive shuttle piston further comprises at least one actuator rod secured to an actuator rod head, said actuator rod head connected to said shuttle piston by a second frangible connector that is broken when the seal is urged into the annulus between the casing hanger and the surrounding tubular.

6. (Previously presented) The tool of Claim 5, wherein:
said lower body includes a plurality of latching dogs spaced circumferentially thereon, said latching dogs urged into engagement with the hanger by axial movement of a latching ring positioned on said mandrel when said mandrel is axially moved relative to said lower body.

7. (Previously presented) The tool of Claim 6, wherein:
said tool body and said shuttle piston comprise at least one flow return passage, said flow return passage cooperating with at least one flow return passage in the hanger to allow cementing of a string attached to the lower end of the hanger prior to urging the seal assembly into the annulus between the hanger and the surrounding tubular.

8. (Previously presented) The tool of Claim 7, wherein:
said lower body operably connected to said valve by a pin for rotating a ball in said valve between said open and closed positions.

9. (Previously presented) The tool of Claim 8, wherein:

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said at least one second connector comprises at least one latching segment for retaining the seal assembly in a position axially displaced above the ~~easing~~ hanger during installation, said at least one latching segment when presented as a plurality of latching segments has them circumferentially spaced around said main body of said tool body.

10. (Previously presented) The tool of Claim 9, wherein:

said plurality of latching segments are released from the seal assembly by pressure applied in the bore of said mandrel which shifts said shuttle piston relative to said tool body.

11. (Previously presented) The tool of Claim 10, wherein:

said frangible connector secures said upper body to said pressure responsive shuttle piston prior to the seal assembly being urged into the annulus between the hanger and the surrounding tubular and further comprises at least one bolt .

12. (Currently amended) An installation tool for landing a hanger in a surrounding tubular and setting a seal assembly in the annulus between the hanger and surrounding tubular, comprising:

a mandrel having an upper end ~~for connection to~~ connect to a first string of pipe and a bore therethrough;

a tool body having a lower end for connection to a second string of pipe, said tool body carried by said mandrel;

said tool body having a main body, an upper body and a lower body, said mandrel and said tool body axially moveable relative to one another;at least one latching dog positioned circumferentially on said tool body for releasably connecting said tool body to a the hanger;

at least one latching segment on said tool body for releasably connecting said tool body to the seal assembly, without rotation of said upper end connection of said mandrel ~~that is connectable to the first string;~~

a pressure responsive shuttle piston on said mandrel, said shuttle piston axially moveable to urge the seal assembly into the annulus between the hanger and the surrounding tubular in which said hanger is landed; and,

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said mandrel having a ball valve positioned in said mandrel bore, said ball valve operable between open and closed positions by axial movement of said mandrel relative to said tool body.

13. (Previously presented) The tool of Claim 12, wherein:

said upper body is secured to said pressure responsive shuttle piston prior to said the seal assembly being urged into the annulus between the hanger and the surrounding tubular.

14. (Previously presented) The tool of Claim 13, wherein:

said pressure responsive shuttle piston further includes at least one actuator rod secured to an actuator rod head, said head selectively connected to said shuttle piston for release when the seal is urged into the annulus between said casing hanger and the surrounding tubular.

15. (Previously presented) The tool of Claim 14, wherein:

said latching dog is urged into engagement with the hanger by axial movement of a latching ring positioned on said mandrel when said mandrel is axially moved relative to said tool body.

16. (Previously presented) The tool of Claim 15, wherein:

said tool body and said shuttle piston comprising at least one flow return passage, said flow return passage cooperating with at least one flow return passages in the hanger to allow cementing of a tubular string attached to the lower end of said hanger prior to urging the seal assembly into the annulus between said hanger and the surrounding tubular.

17. (Previously presented) The tool of Claim 16, wherein:

said tool body comprises a ball pin for operating said ball valve by axial movement of said mandrel relative to said tool body.

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18.(Previously presented) The tool of Claim 17, wherein:
said latching segment is released from the seal assembly by pressure applied in the bore of said mandrel which shifts said shuttle piston relative to said tool body.

19.(Currently amended) An assembly for delivering a tubular string into a surrounding tubular for support in the surrounding tubular, comprising:
a mandrel assembly having a upper end ~~adapted for~~ connection to a delivery string;
a gripping member on said mandrel assembly for selective release from the tubular string, without rotation of said upper end connection of said mandrel, after delivery of said tubular string to a supported position in the surrounding tubular;
a seal member on said mandrel assembly selectively actuatable by said mandrel assembly into an abutting relation with the surrounding tubular.

20.(Currently amended) The assembly of claim 19, wherein:
said gripping member is selectively initially engaged to the tubular string for delivery to a supported position in the surrounding tubular without ~~mandrel~~ rotation of said upper end connection.

21. (Currently amended)The assembly of claim 20, wherein:
said seal member is actuatable by said mandrel without rotation of said upper end connection.

22. (Currently amended) The assembly of claim 19,wherein said mandrel assembly further comprises comprising:

a mandrel;

a tool body slidably mounted to said mandrel and supporting the tubular string.

23. (Previously presented) The assembly of claim 22, further comprising:

a through passage in said mandrel and a valve mounted in said passage, said valve actuatable by relative sliding movement between said mandrel and said tool body.

24. (Previously presented) The assembly of claim 23, further comprising:

a piston actuated by pressure within said passage when said valve is in a closed

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position to actuate said gripping member and said seal member in a predetermined order.

25. (Currently amended) The assembly of claim 24, wherein:

said gripping member comprises a plurality of circumferentially spaced latching dogs;
said seal member is releasably mounted to said tool body to allow said mandrel and tool body to be removed from the surrounding tubular while leaving the tubular string supported in the surrounding tubular and said seal member likewise supported in the surrounding tubular.

26. (Currently amended) An assembly for delivering a tubular string into a surrounding tubular for support in the surrounding tubular, comprising:

a mandrel assembly having a upper end ~~adapted for~~ connection to a delivery string;
a gripping member on said mandrel assembly for selective initial engagement to the tubular string, without rotation of said upper end connection of said mandrel, for delivery of said tubular string to a supported position in the surrounding tubular;
a seal member on said mandrel assembly selectively actuable by said mandrel assembly into an abutting relation with the surrounding tubular.

27. (Currently amended) The assembly of claim 26, wherein said mandrel assembly further comprises comprising:

a mandrel;

a tool body slidably mounted to said mandrel and supporting the tubular string.

28. (Previously presented) The assembly of claim 27, further comprising:

a through passage in said mandrel and a valve mounted in said passage, said valve actuable by relative sliding movement between said mandrel and said tool body.

29. (Previously presented) The assembly of claim 28, further comprising:

a piston actuated by pressure within said passage when said valve is in a closed position to actuate said gripping member and said seal member in a predetermined order.

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30. (Previously presented) The assembly of claim 29, wherein:
said gripping member comprises a plurality of circumferentially spaced latching dogs;
said seal member is releasably mounted to said tool body to allow said mandrel and
tool body to be removed from the surrounding tubular while leaving the tubular string
supported in the surrounding tubular and said seal member likewise supported in the
surrounding tubular.